

AMERICAN INDIAN GATHERING AND RECREATION USES OF NATIONAL FORESTS

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Abstract

This paper identifies and describes the patterns of use of the Chippewa National Forest (Minnesota) by Leech Lake Band of Ojibwe members; and, the use patterns of six national forests in northwest Montana by the Confederated Salish and Kootenai Tribes. The paper also identifies conflicts tribal members encounter while using the forests and makes recommendations regarding the management of national forests in light of tribal members' use of these lands. The implications from both study areas indicate that Forest Service managers should pay more attention to cooperative approaches, and potential co-management of forest resources that are near American Indian reservations. Managers need to be more sensitive to American Indians' uses and values associated with national forests and other protected lands that are close to reservations. They also need to be aware of the history of government and tribal relations, as well as tribal member traditional and historic uses of forests.

1.0 Introduction and Background

Although many Indian reservations are significant in size (often surrounded by public lands), little is known about the values American Indians place on public lands near reservations (Keller & Turek 1998; McAvoy 2002; Wilkinson 1997). The emerging USDA Forest Service policy and management approach of ecosystem management requires a holistic look at resource utilization and protection while including stakeholders in the planning and decision making process. American Indians have often been under-represented in these deliberations. Although a number of scholars have explored Indian views regarding the land (Jostad, McAvoy & McDonald 1996; McAvoy, McDonald & Carlson 2003; Redmond 1996; Tyler 1993) and forests

(Kimmerer 2000; Morishima 1997), Forest Service managers and tribal resource managers often have little information on how Forest Service management practices such as timber harvests, road building or closure, or changing water levels on lakes-reservoirs-streams will impact Indian people trying to use these forests.

The purpose of this study was to identify and understand the American Indian gathering and outdoor recreation uses of national forests near a reservation. In addition, the study sought to understand: the significance of these activities and their locations to tribal members; how these activities relate to place meanings; and the conflicts encountered by tribal members. The theoretical framework of the study was based on the concept that traditional uses and leisure connect people to places while also adding functional and symbolic meaning to places (Williams & Patterson 1996; Williams & Stewart 1998). The meanings people ascribe to these places are the emotional, cultural and value laden connections people have with specific land areas.

Few studies have been conducted regarding American Indian gathering or outdoor recreation activities, and even fewer studies focusing on national forests. Cordell (1999) provides some information on American Indian outdoor recreation activities in general. He finds that American Indians participate in typical activities found in other populations. However, McDonald and McAvoy (1997) in their literature review of American Indians and leisure found that among American Indians there seems to be little division between work and leisure. There does not seem to be much fragmentation of the human experience into distinct categories such as work, leisure, family, and spiritual. Instead, many of the activities, especially those that may be called leisure activities like hunting, fishing, and berry picking, seem to be wrapped up in a close association with sustenance, gathering activities, leisure, family, culture and tradition. Many of the activities American Indians participate in are closely related to traditional activities Indian people have done for centuries. These include hunting, fishing, trapping, gathering berries, gathering wild rice, and others. These activities have more than a leisure context. They are also important means used to carry on family and tribal traditions, provide sustenance for families, and continue

a spiritual connection to the land and to the animal and plant resources. Outdoor recreation in this context has a distinct cultural expression. For American Indians, these activities are much more than a leisure experience.

Gathering is the harvesting or picking of natural resources, both plants and animals, and can be seen as a multi-dimensional activity. At certain times it may be done for livelihood purposes such as food necessary for survival, or as a means to collect added income for an individual or household. While at other times gathering may take on a leisure and cultural role; gathering as a means to be out in nature or to pass on family traditions. Emery (1998) identified two main taxonomies in which the gathering of forest products may be categorized- functional uses and livelihood uses. She identified functional uses as “ceremonial/cultural, edible, flora/nursery/craft, and medicinal” (p. 58). While these functional uses may not be necessary for survival, they are no doubt important for the individual or group as a benefit of their gathering activity. Emery identified livelihood uses of forest products as “barter/gift, personal consumption, sale in raw form, and sale in processed form” (p. 58). These uses indicate a benefit of gathering associated with subsistence and income. In her results, Emery makes several striking characterizations regarding the unique nature of gathering in the lifestyles of the American Indian population. First, Emery reports that as a group, American Indians tend to have a more diverse use of gathered resources to include both medicinal and ceremonial purposes. In addition, Emery noted that while Anglo American gatherers tend to use gathered edible resources as a resource for additional income, American Indian respondents overwhelmingly used these resources for the immediate needs of their families and communities. These findings show the great importance that these native gathering activities have to American Indians.

Any attempt by managers or researchers to understand how American Indians relate to national forests and other protected lands must consider the history of how Indian people used those forests in the past, and how some of the forests came to be designated as public lands. Before being confined to reservations, most Indian tribal groups extensively used lands now designated as national forests. They lived on these lands, traditionally used these lands for sustenance, and buried their ancestors there. Most tribes signed treaties with the federal government by the

mid 1800s, giving up vast tracts of land, and agreeing to move to designated reservations. By 1880 Indian people owned 136 million acres of land on reservations. However, the Dawes Act of 1887 caused significant amounts of land on some reservations to revert back to government ownership. Portions of that land were opened for homesteading by Anglo Americans. Some of the land remained in federal ownership. Some of the land that was originally part of reservations was designated as national forests and national parks (Keller & Turek 1998). By 1930 the amount of land owned by Indians had fallen to 46 million acres, a reduction of 2/3. Some tribes lost 95% of their reservation lands because of the Dawes Act. Tribal members today remember this. This history influences how tribal members regard national forest lands that in many instances were once part of their reservations. This history also influences how Indian people view the Anglo American managers of these lands.

2.0 Methods

2.1 Study Sites

This study focused on two tribal groups on two reservations, the Leech Lake Band of Ojibwe on the Leech Lake Reservation in Minnesota, and the Confederated Salish-Kootenai Tribes on the Flathead Reservation in Montana. The Leech Lake Reservation is located at the headwaters of the Mississippi River in north/central Minnesota, and is home for 4,500 tribal members. The boundaries of the reservation contain 677,000 acres. But, as a result of the Dawes Act, the Leech Lake Band of Ojibwe now only owns a mere 34,000 acres. In this case, this tribe lost 95% of their reservation lands due to the implementation of the Dawes Act. Of the remaining land area, Chippewa National Forest controls 500,000 acres, with the remainder owned by Anglo Americans or the State of Minnesota. The portion of Chippewa National Forest on the reservation is managed for timber production and recreation. The Leech Lake Band members have a long history of using these lands for gathering and other traditional activities (Leech Lake Band of Ojibwe 1999; Mason 1958; Warren 1984).

The Flathead Reservation, located in northwestern Montana, is home to 6,000 persons of Indian descent, including 3,500 enrolled tribal members. The Confederated Salish-Kootenai Tribes actually include people from the Salish, Kootenai, and Pend D'Oreilles tribes. The reservation contains 1.2 million acres, of

which the Tribes own 722,000. On this reservation the Indians lost 42% of their lands due to the Dawes Act. Much of the remaining land on the reservation is now owned by Anglo Americans, with 19,000 acres controlled by the U.S. Fish and Wildlife Service (National Bison Range). The reservation borders the Flathead and Lolo National Forests. The Tribes have traditional use histories with those two forests as well as with four additional nearby national forests: Kootenai, Bitterroot, Deer Lodge, and Helena National Forests (Bigart & Woodcook 1996; Teit & Boas 1927-28).

2.2 Data Collection and Analysis

Semi-structured interviews were completed in 2001-2003 with a purposive sample of 59 Leech Lake Ojibwe tribal members in Minnesota and 60 Confederated Salish-Kootenai tribal members in Montana. The study in Minnesota focused on gathering activities on the Chippewa National Forest. The study in Montana focused on outdoor recreation activities on the six national forests near the Flathead Reservation. Participants in the study were identified by respective staff of Tribal Departments of Natural Resources as having indicated they use national forests for either outdoor recreation or gathering activities. Interviews were conducted by tribal members who were trained in interview techniques. Questions focused on gathering, recreation and other traditional activities in nearby national forests, reasons why specific places and activities were important, personal and family history of forest use, conflicts encountered, and recommendations for Forest Service managers. Interviews were audio taped and transcribed for analysis. Quantitative data were displayed in frequency tables. Qualitative analysis included reading all interviews to generate major themes and categories, placing narrative data in categories, and generating conclusions. An independent analysis of 25% of the data was done by 3 researchers to accomplish consistency of analysis. Constant comparisons and member checks were utilized to increase validity of conclusions.

3.0 Results and Discussion

All of the 119 subjects interviewed for this study lived on their respective reservations. There were 87 males and 32 females in the sample, and they ranged in age from 20-77 (mean age 49). Because the participants in this study were selected because of their known use of the forest, participants are not a random sample of all tribal members. It is not surprising then that these participants

Table 1.—Gathering Activities of Leech Lake Ojibwe

Wild Rice (88%)	Sugar Maple Sap (54%)
Fishing/Netting (86%)	Birch Bark (53%)
Berry Picking (81%)	Wild Grapes (49%)
Hunting (80%)	Cranberries (47%)
Fuel wood (69%)	Trapping (46%)
Pine Cones (66%)	Red willow (42%)
Swamp Tea (66%)	Eagle Feathers (42%)
Bough Cutting (61%)	Fruit/Nut (41%)
Cedar (59%)	Sage (39%)
Medicinal Plants (58%)	Basswood (37%)

Additional gathering activities identified: princess pine, sweet grass, porcupine quills, spruce, black/green ash, minnows, leeches, mushrooms, cedar root, red osier, clay, wintergreen, worms, twigs, June berry brush, diamond willow, crab apples, plums, and ginger root.

Note. Values enclosed in parentheses represent percentage of sample indicating participation.

would have a relatively high frequency of visits to the national forest. But what is surprising is the high number of times per year they visit the national forests for either gathering or recreation. On the Leech Lake Reservation, tribal members interviewed used the Chippewa National Forest for gathering activities a great deal. Of those interviewed, 80% use the forest more than 6 times per year, and 53% more than 20 times per year. One respondent even listed his occupation as “native gatherer.” On the Flathead Reservation 57% of tribal members interviewed used national forests for recreation 2-5 times per year, and 12% used the forests 6-20 times per year. The Flathead Reservation tribal members used all six national forests in the region (Flathead, Lolo, Kootenai, Bitterroot, Deerlodge and Helena. Tribal members from both study sites indicted that their gathering and outdoor recreation activities typically occur in undeveloped areas within the national forests with immediate and extended family members. They also indicated they learned of these specific gathering and recreation places through family ties. Both study groups use the forests year-round for their gathering and recreation activities.

Respondents in the Leech Lake interviews were asked to name the gathering activities they participate in within Chippewa National Forest. They were shown a list of 31 activities developed by the Leech Lake Band Department of Resource Management. Many of these activities were identified in Emery’s study in northern Michigan. Respondents identified 39 total gathering activities they participate in on the national forest. Table 1 lists the

top 20 activities, and the percentage of the respondents listing that activity. Gathering wild rice, fishing/netting, berry picking, hunting, gathering fuelwood, pine cones, swamp tea and bough cutting had participation rates of over 60%. Those interviewed were asked to explain why they participate in gathering activities. The major reasons for gathering were: food source (93%), income (60%), family tradition (50%), personal enjoyment (43%), cultural tradition (43%), ceremonial purposes (23%), medicinal purposes (23%), and a spiritual connection (17%). Even though utilitarian reasons are the most often identified reasons, most of those interviewed also indicated either family tradition, cultural tradition, ceremonial or spiritual reasons were important as well.

When asked if they encounter conflicts when trying to participate in gathering activities, respondents in the Leech Lake study identified timber harvesting and road closures as the major sources of conflicts. Fifty-three percent of Leech Lake respondents identified timber harvests as disrupting and/or destroying their gathering opportunities in the forest. They especially noted that clear cutting practices often totally destroy plants and game habitat. Some tribal members had been gathering specific plants in an area for years, before a clear cut completely destroyed the area for gathering. Forestry management practices that allow clear cut areas to grow back into a single species stand (usually aspen) often result in a loss of plants and animals that rely on a more diverse ecosystem. Tribal members often indicated in interviews that the forests seem to be managed solely for the benefit of timber corporations, production that offers no value for tribal members. The other major cause of conflict, identified by 51% of those interviewed, is the closing (gating) of forest roads. These roads are often closed during the summer, which is the time of the year when the forest is used most often by tribal members for gathering. This means tribal members, especially older people, cannot gain adequate access to forest areas traditionally used for gathering. It is particularly galling to tribal members to see these same roads opened in the fall during hunting season so Anglo American tourists can have access to forest areas for hunting. Tribal members also indicated conflicts with commercial picking of resources and off road vehicle use.

In the Montana part of the study, Salish-Kootenai tribal members were asked to name the outdoor recreation activities they participate in on six national forests in the

Table 2.—Outdoor Recreation Activities of Salish-Kootenai

Hunting (57%)	Relaxation (7%)
Camping (50%)	Photography (7%)
Berry Picking (50%)	Reflection (5%)
Fishing (38%)	Driving (5%)
Sightseeing (27%)	Horseback Riding (5%)
Hiking (27%)	View Wildlife (5%)
Gathering Foods (22%)	Boating (5%)
Picnic (17%)	Cut Firewood (5%)
Family Tradition (10%)	Walking (3%)
Visit Historic Sites (9%)	Snowmobiling (3%)

Additional outdoor recreation activities identified: adventure, motor biking, and religious activities.

Note. Values enclosed in parentheses represent percentage of sample indicating participation.

region. They were shown a list of 12 activities that are typical of other outdoor recreation studies. Respondents indicated a total 25 outdoor recreation activities they do in the national forests. Table 2 lists the top 20 of these activities, and the percentage of respondents listing that activity. Hunting, camping, and berry picking had participation rates of over 50% of respondents, and fishing, sightseeing, hiking, and gathering foods had rates over 20%. Even though these respondents were asked to indicate “outdoor recreation” activities, four of the top seven activities identified were “gathering” activities.

The Montana respondents were asked to identify any conflicts they encounter when they try to participate in outdoor recreation activities in national forests. The three most identified conflicts were overcrowding (37%), lack of respect and racist behavior by Anglo American visitors (33%), and harassment and racism on the part of Forest Service and other agency managers and rangers (17%). The overcrowding issue comes up when Indian people try to use traditional areas in the national forest and encounter crowded conditions, mainly with too many Anglo Americans. As national forest use increases, many American Indians are feeling pushed out of their traditional use areas by other recreation visitors. Some of this discontent comes from the second major conflict cause, which is Anglo Americans showing a lack of respect for Indians and their uses of the forests. Those interviewed recounted a number of situations where Anglos showed a lack of respect for Indians and for Indian treaty rights. This lack of respect took the form of harassing language, and verbal and physical

threats. Respondents also experienced harassment and racist behavior on the part of law enforcement officers encountered while in the national forests, and from Forest Service staff. Many of those interviewed perceived racial profiling being practiced by enforcement staff of numerous county, state and federal management agencies. This often resulted in Indian people being stopped and checked numerous by enforcement staff while trying to use the national forests for recreation activities. As stated by one respondent, "Non-Indians lack respect for us Indians and our long-time uses of the forest, especially our treaty rights." Salish-Kootenai tribal members also indicated conflicts with commercial pickers of resources and with off road vehicle use.

The tribal members in this study have a deep and long attachment to places in national forests that are near their reservations. Williams and Patterson (1996) have posited that place meanings usually fall into a taxonomy of four categories: aesthetic/inherent, individual/expressive, instrumental/goal directed, or cultural/symbolic. They hold that the aesthetic/inherent category is quite independent of cultural influences, but the priority of the other place meaning categories may differ according to culture. Most literature and studies indicate that the priorities of Anglo Americans regarding place meanings are usually in the order listed above. But, the results of this study indicate that the priority for American Indians interviewed in this study has cultural/symbolic on top, then instrumental/goal directed, and then individual/expressive. Their main priority of place meaning is based on a cultural/symbolic perspective, but also with some instrumental/goal directed (utilitarian) perspective. An example of this combination of cultural/symbolic and instrumental/goal directed perspective is found in the following quote from one of those interviewed in the study: "When I go to the forest, I think about the spirituality that's connected there. I think about the bones of my ancestors looking at me, and helping me to teach my kids how to respect the forest and all that it has to offer us, and providing us a place to camp, to share our meal with the ancestors, to pick berries, to swim, to partake in the traditional materials, bark, the willow, whatever it is that we're going to the woods to get. And that's what we always pay tribute to, our ancestors and all the people that made tracks for us."

Two other quotes from those interviewed illustrate the importance of these forest gathering and recreation

activities to American Indians who live on reservations near national forests. They also illustrate the combination of cultural/symbolic and instrumental/goal directed meanings. A person in the Flathead Reservation study said, "I want this on the record, it shows a different perspective on the use of forests between Indians and non-Indians. We Indians today, I will admit I go to the forest sometimes to recreate. But, most often when we go to the forest it's more than recreation, we go there for a spiritual and cultural purpose. So, it's not purely recreation." And, a person from the Leech Lake Reservation said, "Traditionally it's very important to maintain the tradition of doing that activity (gathering sugar maple sap). It has sustained us for all these times, it was part of our natural diet. For our Ojibwe people it's just been so important for their livelihood, and keeping that tradition alive to me is of the utmost importance so our future generations can continue to do that activity. It also helps our identity and who we are as native people."

4.0 Conclusions and Recommendations

The American Indians interviewed in this study indicated they participate extensively in a wide range of gathering and outdoor recreation activities on national forests on and near reservations. Further, these activities and places are very important to the continued connection to the land enjoyed by these respondents and their families. Moreover, American Indians view these gathering and recreation activities on the land as traditional ways of subsistence use of the natural world, a way to stay connected to nature and to their culture. This suggests that they see multiple functions for activities termed "gathering" and "recreation." These activities, and the places connected to them, have cultural/symbolic and spiritual meanings as well as functional meanings. Their view of places in the forest is a result of cultural connections to the land through symbols, myths and memories. Major constraints for American Indian use of national forests are manager decisions on timber harvesting, road closures and decisions concerning commercial picking and off road vehicle use. Another major constraint for some respondents is the lack of respect and understanding by visitors and managers toward Indian values and traditions, as well as visitor and manager racist behavior. Furthermore, a final constraint is when managers and visitors lack understanding of Indian treaty rights, rights that in some cases give Indians unique use rights on national forest lands.

American Indians have a deep sense of place meaning and attachment to areas in national forests, areas that have been traditional use areas for their people. Gathering and recreation activities continue to tie them to these special places. American Indians also desire a larger role in management decisions on national forests near reservations, decisions on timber harvests, road building and closures, water level changes, off road vehicle use and commercial picking.

The results of this study, and the specific comments of respondents, generate a number of recommendations for national forest managers. First, managers need to understand that history influences how Indian people now relate to management agencies and managers. Managers need to be aware of how lands that are now national forests were obtained and designated. It is unrealistic to believe that American Indian people are not aware of the history of these areas, and how some national forests were created out of lands that were formerly Indian lands, lands that had been used by tribes for generations. Managers need to be sensitive to the long history of Indian traditional use of national forests lands, and of the deep cultural/symbolic and spiritual meaning these lands hold for Indian people. Traditional practices should be allowed, accommodated and honored when possible. Managers also need to consider the effects of management decisions on all “community “ members, including tribal members on and off the reservation, elders, ancestors and elements of the natural world. Managers need to create among staff and other visitors a better understanding of treaty rights, and the history of Indians relating to areas within national forests. Methods to accomplish this can include interpretive signs describing Indian traditional uses of the forest, assigning Indian place names, and signs and other interpretive materials explaining Indian treaty rights.

The Indian people in this study are calling for more local, shared decision making. This research indicates that Forest Service managers should pay more attention to cooperative approaches, and potential co-management of national forest lands that are near American Indian reservations. Simply consulting with tribes, where the Forest Service retains all the power, is not going to work. Managers must be willing to share power as well as information. This means managers must be willing to work with tribal resource managers on a more equal basis. Many tribes now have natural resources departments

staffed with well trained managers who are eager to work with national forest staff to work out arrangements for co-management of lands that are of importance to Indian people. The following are some specific recommendations for working with tribes. Allow for increased consultation and reflection time in the planning process. Indian people seem to be very deliberate in land use decisions, and it will take more time than Anglo Americans typically allow. Face to face contact is very important. Do not just send a “scoping letter” or notice of a meeting through the mail. Meet with Indian people in person, go to their office, take a small gift, spend the day together to get to know each other. Trust is an important issue, and it takes time and personal contact to develop trust and respect. Understand how tribal councils and Indian governments function. Realize that Indian governmental decisions are influenced by traditional values and often guided by input from elders and culture committees. And lastly, managers in these cooperative management efforts need to focus on where, what and how to meet the needs of American Indians on national forests, in addition to the needs of other stakeholders.

If management agencies had a deeper understanding of how American Indians attach meanings to places in national forests and other protected areas, managers may have an opportunity to avoid some of the conflicts currently present regarding American Indians and national forest areas. One participant in this study summed up the recommendations many American Indians have for Forest Service managers: “I would suggest they (Forest Service) look at a lot of these areas in a different way. Treat them as a blessing, a gift, and not a business. And once they realize how much we depend on a lot of these areas, and still are actively using them, hopefully they can see how important they are to us. My family has been gathering and using that area for years, for generations. And it was passed on to me, and I am passing it on to my grandchildren now.”

5.0 Citations

- Bigart, R. & Woodcock, C. (Eds.). (1996). *In the name of the Salish-Kootenai Nation*. Pablo, MT: Salish Kootenai College Press.
- Cordell, K. H. (1999). *Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends*. Champaign, IL: Sagamore Publishing.

- Emery, M.R. (1998). *Invisible livelihoods: Non-timber forest products in Michigan's Upper Peninsula*. Unpublished doctoral dissertation, The State University of New Jersey, New Brunswick.
- Jostad, P.M., McAvoy, L.H., & McDonald, D. (1996). Native American land ethics: Implications for natural resource management. *Society and Natural Resources*. 9, 565-581.
- Keller, R. & Turek, M. (1998) *American Indians & National Parks*. Tucson: University of Arizona Press.
- Kimmerer, R.W. (2000). Native knowledge for native ecosystems. *Journal of Forestry*. 98(8): 4-9.
- Leech Lake Band of Ojibwe. (1999). *Traditionally used plants*. Unpublished report prepared by the Botany Section of the Fish and Wildlife Program of the Leech Lake Division of Resource Management. Cass Lake, MN.
- Mason, P. (Ed.). (1958). *Schoolcraft's expedition to Lake Itasca: The discovery of the source of the Mississippi*. East Lansing, MI: Michigan State University Press.
- McAvoy, L. (2002). American Indians, place meanings and the old/new west. *Journal of Leisure Research*, 34(4):383-396.
- McAvoy, L., McDonald, D. & Carlson, M. (2003). American Indian/First Nation place attachment to park lands: The case of the Nuu-chah-nulth of British Columbia. *Journal of Park and Recreation Administration*, 21(2): 84-104.
- McDonald, D., & McAvoy, L.H. (1997). Native Americans and Leisure: State of the research and future directions. *Journal of Leisure Research*. 29 (2) 145-166.
- Morishima, G.S. (1997). Indian forestry: From paternalism to self-determination. *Journal of Forestry*. 95(11): 4-9.
- Redmond, L. (1996). Diverse Native American perspectives on the use of sacred areas on public lands. In B.L. Driver, D. Dustin, T. Baltic, G. Elsner, & G. Peterson (Eds.), *Nature and the human spirit: Toward an expanded land management ethic*. (pp. 127-134). State College, PA: Venture Publishing.
- Teit, J. & Boas, F. (1927-28). The Flathead group. In, *The Salishan tribes of the western plateaus*. 45th B.A.E. Annual Report. Available through The Shorey Book Store, 813 Third Avenue, Seattle, WA.
- Tyler, M.E. (1993). Spiritual stewardship in aboriginal management systems. *Environments*. 22(1): 1-8.
- Warren, W. (1984). *History of the Ojibway People*. St. Paul: Minnesota Historical Society Press.
- Wilkinson, C. (1997). Paradise revised. In W.E. Riebsame (Ed.), *Atlas of the American west: Portrait of a changing region* (pp 15-45). New York: W.W. Norton & Co.
- Williams, D.R., & Patterson, M.E. (1996). Environmental meaning and ecosystem management: Perspectives from environmental psychology and human geography. *Society and Natural Resources*. 9, 507-521.
- Williams, D.R., & Stewart, S.I. (1998). Sense of Place: An elusive concept that is finding a home in ecosystem management. *Journal of Forestry*. May 1998, 18-23.